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ACADEMIC APPOINTMENTS

2020-Present	Physics of Living Systems Fellow	MIT
2021-Present	Visiting Scientist	Caltech
2021-Present	Affiliate Research Scientist	Blue Marble Space Institute of Science

EDUCATION

2013-2018	P.h.D, Bioinformatics	Boston University
2011-2013	M.S., Microbial Engineering	University of Minnesota
2005-2010	B.S., Chemistry, Biochemistry with Honors, *Cum laude*	University of Minnesota

PUBLICATIONS & MANUSCRIPTS

Goldford, J.E.*, Smith, H.B., Longo, L.M. Wing, B., & McGlynn, S.M.. Continuity between ancient geochemistry and modern metabolism enabled by non-autocatalytic purine biosynthesis. (*co-corresponding author). *bioRxiv*. 2022. doi: https://doi.org/10.1101/2022.10.07.511356 (*submitted*)

de Crécy-Lagard et al. A roadmap for the functional annotation of protein families: A community perspective. *Databases*. 2022

Best, S. Gubser P., Sethumadhavan S., Kersbergen A., Negrón YA, **Goldford, J.E.**, et al. Glutaminase inhibition impairs CD8 T cell activation in STK11/Lkb1 deficient lung cancer. *Cell Metabolism*. 2022. Apr 23; S1550-4131(22) 00130-9.

Goldford, J.E.*, George, A.B., Flamholz A., & Segrè, D*. Protein cost minimization promotes the emergence of coenzyme redundancy. *PNAS*. 2022. Mar; 119 (14) e2110787119; https://doi.org/10.1073/pnas.2110787119 (*co-corresponding author)

Diaz-Colunga, J., Lu, N., Sanchez-Gorostiaga, A., Chang, C.Y.,Cai, H.S., **Goldford, J.E.**, Tikhonov M., & Sanchez, A. Top-down and bottom-up cohesiveness in microbial community coalescence. *PNAS*. 2022 Feb; 119 (6) e2111261119; https://doi.org/10.1073/pnas.2111261119

Estrela, S.,Vila, J.C.C., Lu, N., Bajic, D., Rebolleda-Gomez, M., Chang, C.Y., **Goldford, J.E.**, Sanchez-Gorostiaga, A., & Sanchez, A. Functional attractors in microbial community assembly. *Cell Systems*, 2021 Oct 11; S2405-4712(21)00379-3. doi: 10.1016/j.cels.2021.09.011

Rosenberg, D.R., Haber, M., **Goldford, J.E.**, Lalzar, M., Aharonovich, D., Al-Ashhab, A., Lehahn, Y., Krom, M.D., Steindler L., & Sher, D.J. Particle-associated and free-living bacterial communities in an oligotrophic sea are affected by different environmental and anthropogenic factors. *Environmental Microbiology*. 2021 May 25. doi: 10.1111/1462-2920.15611.

Kalev, P. et al. MAT2A inhibition blocks the growth of MTAP-deleted cancer cells by reducing PRMT5-dependent mRNA splicing and inducing DNA damage. *Cancer Cell*. 2021 Feb; 39(2):209-224.e11. doi: 10.1016/j.ccell.2020.12.010

Jinich, A., Sanchez-Lengeling, B., Ren, H., **Goldford, J.E.**, Noor, E., Sanders, J., Segrè, D.& Aspuru-Guzik, A. A thermodynamic atlas of carbon redox chemical space. *PNAS*. 2020 Dec; 117 (52) 32910-32918

Lawson, K.A. et al. Functional genomic landscape of cancer-intrinsic immune evasion to cytotoxic T lymphocyte killing. *Nature*, 2020 Sep; 586(120-126)

Marsland R., Cui W., **Goldford, J.E.**, & Mehta, P. The Community Simulator: A Python package for microbial ecology. *PLoS ONE* 2020 Mar; 15(3): e0230430

Goldford, J.E.*, Hartman, H., Marsland R., & Segrè, D*. Environmental boundary conditions for the origin of life converge to an organo-sulfur metabolism. *Nature Ecology & Evolution*. 2019 Nov; (3)1715-1724 (*co-corresponding authors)

Marsland R., Cui W., **Goldford, J.E.**, Sanchez, A., Korolev, K., & Mehta, P. Available energy fluxes drive a phase transition in the diversity, stability, and functional structure of microbial communities. *PLoS Computational Biology*. 2019 February; 15(2): e1006793

Goldford, J.E., Lu, N., Bajic, D., Estrela, S., Tikhonov M., Gorostiaga, A., Segrè, D., Mehta, P., & Sanchez, A. Emergent simplicity in microbial community assembly. *Science*. 2018 August; (361) 469-74

Goldford, J.E., & Segrè, D. Modern views of ancient metabolic networks. *Current Opinion in Systems Biology.* 2018 Apr; (8) 117-124

Reznik, E., Christodoulou, D., **Goldford, J.E.**, Briars, E., Sauer, U., Segrè, D., & Noor E. Genome-scale architecture of small molecule regulatory networks and the fundamental trade-off between regulation and enzymatic activity. *Cell Reports.* 2017 Sep 12; 20(11) 2666–2677

Goldford, J.E., Hartman, H., Smith, T.F., & Segrè, D. Remnants of an ancient metabolism without phosphate. *Cell*. 2017 Mar 9; 168(6): 1126-1134[1]

Goldford, J.E. and Libourel, I. Unsupervised Identification of Isotope Labeled Peptides. *Analytical Chemistry*. 2016 Jun 7;88(11) 6092-6099

Mandy, D., **Goldford, J.E.**, Yang, H., Allen, D., & Libourel, I. Metabolic flux analysis using 13C peptide label measurements. *Plant Journal*. 2014 Feb; 77(3): 476-86

Allen, D.K., **Goldford, J.E.**,Gierse, J.K., Mandy, D., Diepenbrock, C.,& Libourel, I .Quantification of Peptide m/z Distributions from (13)C-Labeled Cultures with High-Resolution Mass Spectrometry. *Analytical Chemistry*. 2014 Feb 4;86(3): 1894-901

INVITED TALKS & CONFERENCES

2022	Caltech 3CPE Seminar (*invited talk*)	Pasadena, CA
2022	GOE-DEEP, ICDP Workshop on Scientific Drilling (*invited*)	Trondheim, Norway
2022	SFI Feasible but Undiscovered Metabolisms (*invited)*	Santa Fe, NM
2022	Brilliant Minds 2022 (*invited)*	Stockholm, Sweden
2022	Templeton Origin of Life Ideas Lab	Prague, CZ
2022	SFI New Frontiers in the Origins of Life (*invited*)	Santa Fe, NM
2022	NSF Building a Network for Functional Annotation of Protein Families MCB- 2129768	Orlando, FL
2022	Gordon Research Conference, Origin of Life (*invited talk*)	Ventura, CA (postponed)
2021	KITP Q-Bio summer course (*invited talk*)	UCSB, Santa Barbara, CA
2021	Geobiology summer course (*invited talk*)	Mammoth Lakes, CA

[1] F1000 Prime recommended, cover article and commentary in same issue

2021	Geological and Planetary Sciences Seminar (*invited talk*)	Caltech, Pasadena, CA
2021	Geobiology seminar series (*invited talk*)	Colorado University
2021	Broad MIA Talk on Microbiomes and Metabolism (*invited talk with Pankaj Mehta*)	Broad Institute
2020	NASA Origin of Life, Thio-biosphere group (*invited talk*)	NASA-NSF virtual team
2018	Stochastic Modeling in Ecology and Evolutionary Biology (*talk*)	U. of Padova, Venice Italy
2017	NASA Origin of Life, Thio-biosphere group (*invited talk*)	NASA-NSF virtual team
2017	Lawrence Livermore National Lab Seminar (*invited talk*)	LLNL, CA
2017	Earth and Planetary Science Seminar (*invited talk*)	U. of California, Berkeley
2017	Biodesign symposium (*invited talk)*	BU, Boston, MA
2017	Simons Foundation Theory and Biology Conference (*poster*)	Flatiron Institute, NYC, NY
2016	Physics of Living Systems Seminar (*invited talk*)	MIT, Cambridge, MA
2015	Astrobiology conference, AbSciCon (*talk*)	AGU, Chicago, IL
2014	Intelligent Systems for Molecular Biology (ISMB) (*poster*)	ISMB, Boston, MA

TEACHING

2021	Instructor at KITP in *The Ecology and Evolution of Microbial Communities*	KITP, UCSB
2017	Guest Lecturer for *Dynamics and Evolution of Biological Networks*	Boston University
2016	Teaching assistant for *Methods and Logic in Quantitative Biology*	Boston University
2009	Teaching assistant for *Biochemistry*	University of Minnesota
2008	Teaching assistant for *Biochemistry*	University of Minnesota

NON-ACADEMIC PROFESSIONAL POSITIONS

2022-	Co-founder	The Dayhoff Project, London UK
2018-2020	Computational Biologist, Cell Metabolism	Agios Pharmaceuticals, Cambridge, MA
2009-2011	Research Associate, Immuno-histochemistry	R&D Systems, Minneapolis, MN

PROFESSIONAL ACTIVITIES

2022-	Biosignatures review panel for NASA FINESST-21 program
2022-	Grant reviewer for NSF BIO Evolutionary Processes program
2017-	Peer reviewer for: *Nature Ecology and Evolution*, *PNAS, iScience, Chemical Communications, BMC Bioinformatics, Life & Microorganisms*
2020-	Thesis committee member for Boston University Bioinformatics Program
2021	Admissions committee member for Boston University Bioinformatics Program
2017-2018	Mentor/advisor for REU Summer Student, and three first year PhD students
2017-2018	Organizer for Kavli, Boston University Microbiome coffee hour
2017-2018	Organizer for BU, MIT & Harvard Physics of Living Systems Hangout

HONORS, AWARDS & GRANTS

2022	PI on Origins of Life Initiative Grant ($50,000 USD)	Earthship co.
2021	Collaborator on 3CPE Grant "*Bridging Mineralogy and Enzymology in the Origin of Life*"	Caltech
2020-2023	Physics of Living Systems Fellowship	MIT
2018	Charles DeLisi Doctoral Dissertation Award ($1,000 USD)	Boston University
2017	Hariri Data Science Graduate Student Fellowship ($10,000 USD)	Boston University
2013	Dean's Fellowship	Boston University
2009	Biochemistry Summer Research Program	University of Minnesota

2008	Undergraduate Research Opportunity Program	University of Minnesota
2006-2008	Dean's List	University of Minnesota
2005-2009	Bentson Family Scholar	University of Minnesota